

REMARKS

By this amendment, claim 5 is added for examination. Therefore, claims 1-5 are all the claims in this application.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirano (JP 2-163331).

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Satsunoki (JP 62-224636).

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Kojima (U.S. Patent No. 5,550,002).

Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Byers (U.S. Patent No. 5,821,026).

The Applicants traverse the rejections and request reconsideration.

As described on page 6 of the specification with reference to Fig. 1, the subject matter of the present invention is a metal substrate, wherein a resist pattern is formed on the metal substrate, and a hole, a slit or the like in given form is then provided by etching in the metal substrate to fabricate a shadow mask, an aperture grill or the like. The roughness of that metal substrate is found to have considerable influences on pattern edge precision after resist alignment and development. In view of this, the roughness of the metal substrate is specified in claim 1.

On the other hand, Hirano discloses an electrically conductive copper alloy used for a lead material in integrated circuits or the like, and further discloses that a specific

surface roughness is provided to enhance the adhesion of an oxide film formed on the surface of the copper alloy to protect the copper alloy.

Satsunoki discloses an alloy sheet for lead frames wherein a metal sheet is punched out in given form and silver is then plated on the surface, and further discloses that a surface roughness is specified by given rolling, thereby providing an alloy sheet improved in the ability to be punched and plated.

Kojima discloses a method of producing a printing plate wherein a photo-curable, photosensitive resin layer is formed on an aluminum support member, and further discloses that the surface roughness of the aluminum support member is determined in such a way as to increase the strength of adhesion of the photosensitive resin layer to the aluminum support member on which that resin layer is laminated, thereby improving on the plate power of the printing plate, etc.

Byers makes a mere reference to giving a predetermined surface roughness to an electrophotographic, photosensitive substrate by honing.

As described above, none of the prior art references teach a metal substrate wherein for the purpose of providing a hole, a slit or the like in given form is provided in the metal substrate to fabricate a shadow mask, an aperture grill or the like, a resist pattern is formed on the metal substrate, and its predetermined portion is then dissolved out by etching.

The present invention relates to a metal substrate that is used for the purpose of fabricating a shadow mask or aperture grill having a desired pattern by the dissolution by

etching of a metal from the metal substrate with a resist pattern formed on it. The surface roughness of the metal substrate is found to have considerable influences on the shape of the edge of the pattern to be formed, etc. The surface roughness of the metal substrate is determined in such a way as to come in a specific range, thereby improving on the shape of an opening or the like formed by etching.

The present invention is not anticipated (or rendered obvious over) the cited references for the above reasons.

The present invention seeks to obtain a high-definition shadow mask. To this end, the surface roughness should be less than the predetermined value. Further, as described at page 2, lines 22 to 28 of the specification, there is provided a solution to the problem with a substrate having a smooth surface that when an alignment pattern is brought in vacuum contact with that substrate, difficulty is experienced in drawing vacuum. In the invention, the upper and lower limits to the center line-average roughness on the large-hole side and small-hole side of a shadow mask blank are set to a given range, so that a high-definition shadow mask can be formed.

Claim 5 has been added for examination.


In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Patent Application No.: 10/621,382

Attorney Docket No.: Q76605

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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